Glenda Wiles

From: John.Styba@faa.gov
Sent: Monday, January 22, 2007 2:46 PM
To: Christie Standiford
Cc: Scott Bell; Travis Eickman
Subject: Re: Hamilton Purpose and Need

HAM EA P & N.doc (173 KB) Exhibits.pdf (1 MB)

Thanks Christie for the attached revisions - this revised P & N will be sent to ANM Airports and FAA Legal for review and comment - we will provide any comments received back to Scott Bell as soon as they are reviewed and received.

By copy of this message, we would expect Scott to complete the remaining portion of the EA (Attachments and Appendices) as soon as the P&N comments are incorporated into the final draft.

Thanks,

John W. Styba
Civil Engineer
Helena Airports District Office, HLN-620
Federal Aviation Administration
2725 Skyway Drive, Ste 2
Helena, MT 59602
(406) 449-5279

"Christie Standiford" <cstandiford@m-m.net> 01/22/2007 09:43 AM

To: John Styba/ANM/FAA@FAA
cc: "Scott Bell" <sbell@m-m.net>, "Travis Eickman" <teickman@m-m.net>
Subject: Re: Hamilton Purpose and Need

John -

Attached are the MS Word version of the Hamilton Airport Purpose and Need section with all edits made and a .pdf of the four exhibits for that section. If you have any problems with any of the attachments, please let me know as soon as possible and I'll see what I can do to remedy the situation.

Thank you!

Christie Standiford

Morrison-Maierle, Inc.
901 Technology Blvd.
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>>> <John.Styba@faa.gov> 1/18/2007 4:54 PM >>>

Attached are the revisions we discussed with Scott here in this office this morning.

(See attached file: HAM EA P & N.doc)

Please incorporate and send a revised P & N so we can forward to our Airport's Division / Legal for review and comments. You'll have to incorporate the sketches so you might send two files: a PDF version that has it all together; and a WORD version so future comments can be more easily made.

Scott indicated he could have the revision back to us by next week Monday.

Scott also indicated he is working on getting the rest of the EA (appendix and references) ready to go for the completion of the final draft EA once the P & N is finished.

Call if there are ?'s or problems turning this around as stated above.

John W. Styba
Civil Engineer
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"Travis Eickman"
<teickman@m-m.net
>

To: John Styba/ANM/FAA@FAA

01/18/2007 02:50 PM

cc:

Subject: Hamilton Purpose and Need

John,

See attached as requested. I know the file name isn't the same, but I'm told that this is the one. Let me know if things don't match up and we'll try again.

Thanks,

Travis J. Eickman, E.I.
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teickman@m-m.net(See attached file: History_Inventory.doc)(See attached file: HAM EA P & N.doc)(See attached file: Exhibits.pdf)

I. Purpose and Need for the Proposed Airport Improvements

INTRODUCTION AND HISTORY

This Environmental Assessment, completed by Ravalli County and the Federal Aviation Administration, addresses the developments and improvements recommended for the Ravalli County Airport (Airport), Hamilton, Montana. The improvements are expected to be completed within the next three to five years, contingent upon funding. Four final alternatives for development resulted from the extensive analysis of the airport and these options will be discussed in detail later in the EA.

This airport, serving the City of Hamilton and much of Ravalli County, has existed since the 1930's. It has long been recognized as one of the more important public utilities for Hamilton and the county. With the recent influx of new residents in the City of Hamilton and the surrounding county, the airport has, in the last five years received more attention from both the airport users as well as the citizens who live near the airport.

Ravalli County Airport is located in western Montana, one (1) mile east of the City of Hamilton, and approximately fifty (50) miles south of the City of Missoula, Montana. Access to the Airport is provided from Missoula via State Highway 93 to Hamilton. The airport is situated in a valley with significant mountainous terrain to the south and west. The property immediately surrounding the airport is used for agricultural purposes with residential developments south of the airport. Ravalli County Airport's elevation is 3,644 Mean Sea Level (MSL) with the mean maximum temperature of the warmest month of 84°F. Approximately 318.87 acres comprises the Airport's property, of which 307.59 acres are owned in fee by Ravalli County. The remaining 11.28 acres are controlled by easement.

Current Airport facilities include a 75-foot by 4,200-foot asphalt runway (Runway 16-34), a 30-foot wide parallel taxiway, several connecting taxiways between Runway 16-34 and the parallel taxiway, a 225 foot by 655 foot asphalt apron, several taxilanes of various widths for hangar access, lighted wind sock and segmented circle, and rotating beacon. Runway 16-34 has a medium intensity runway edge lighting system with Precision Approach Path Indicators (PAPIs) as navigational aids on both ends. The design strength of asphalt pavement is 17,000 pounds single wheel loading.

PURPOSE OF THE ENVIRONMENTAL STUDY

The National Environmental Policy Act of 1969 (NEPA) requires that a statement of environmental impacts created by the proposed airport project be prepared as a part of the development process for projects requiring a federal action such as funding or approval. The purpose of this Environmental Assessment under NEPA is to identify the potential environmental impacts associated with the proposed development action and demonstrate how identified impacts can be either eliminated or mitigated.

To fully evaluate the feasibility for the existing site to function as an airport and meet the demands that current and anticipated growth will have on the facility, an assessment of the environmental conditions relative to the proposed improvements was performed.

This assessment discusses the impact categories and addresses the potential for impacts resulting from growth of the Airport, as required by FAA Order 5050.4B Airport Environmental Handbook & by FAA Order 1050.1E.

Editorial Note: This Environmental Assessment (EA) has reviewed and relied on information and material as it was deemed accurate and appropriate from the "Ravalli County Airport Master Plan Update," dated July 2000, prepared by Carter-Burgess Consultants. The Carter Burgess Master Plan was contracted for by the Ravalli County Commission in 1996 and was printed in a draft form in 2000. The Master Plan was never submitted to the FAA for approval in a final form.

This EA also uses pertinent information and material from the "Narrative Report" developed by Morrison-Maierle, Inc. for the Ravalli County Airport Layout Plan, dated February, 2003, and the Ravalli County Growth Policy, December, 2002.

This Environmental Assessment was developed by Monger and Associates, LLC, a sub-consultant to Morrison-Maierle, Inc. and updated by Morrison-Maierle, Inc. in November, 2006 under AIP project 3-30-0037-05.

PURPOSE OF THE PROPOSED AIRPORT IMPROVEMENTS

The objective of Ravalli County is to develop an airport capable of accommodating, in a safe and efficient manner, the forecast growth of aircraft activity and the changing fleet of aircraft needed to serve the community through 2020. The existing airport does not meet the essential design standards required to support the forecast of future activity. The airport is also in the need of additional apron and hangar space to accommodate current and future growth.

As verified in Appendix I: "FORECASTS OF AVIATION ACTIVITY," the Ravalli County Airport is now accommodating aircraft which exceed the operational design limitations of the existing airport. The current 200-foot runway-to-parallel taxiway separation does not meet the 240-foot minimum separation standard established by the FAA for the design aircraft currently using the airport. The primary purpose of the proposed airport developments as recommended is to enhance the safety of both the persons in the aircraft as well as for those on the ground. The developments are proposed to safely and efficiently accommodate the aircraft types presently using the airport and provide for future hangar and apron expansion. These improvements are not intended to attract a heavier, faster, noisier, or larger type of aircraft. The heavy aircraft activity will continue to use the Johnson-Bell Field in Missoula.

The airport as it presently exists does not meet essential design standards required to support the existing or the forecast of future airport activity as demonstrated in Tables 1-1 and 1-2.

The following tables indicate the existing and the required applicable design standards that are not currently met as well as the proposed dimensions indicated on the new Ravalli County Airport Layout Plan (ALP) relative to Runway 16-34, and the Airport's taxiway system. The design standards listed in the tables are for Airport Reference

Code (ARC) BII, the current design aircraft for Hamilton, with a visual approach to each runway end. The design standards indicated are based on Advisory Circular 150/5300-13 through change 10 (Airport Design), 150/5340-1J (Standards for Airport Markings), 150/5325-4 (Runway Length Requirements for Airport Design), and the current edition of the Federal Aviation Regulations Part 77.

TABLE 1-1: Runway Data – Design Standards & Recommended Improvements

Description	Criteria	Existing	Proposed 2003 ALP	
			Phase I	Ultimate
R/W Length	*5170'	4200'	4200'	5200'
R/W Blast Pad Width	95'	75'	95'	95'
R/W Blast Pad Length	150'	50'	150'	150'
R/W Safety Area (L/W)	5770' x 150'	4800' x 150'	4800' x 150'	5800' x 150'
Separation Standards R/W Centerline to: Taxiway Centerline	***240'	200'	400'	400'

TABLE 1-2: Taxiway Data – Design Standards

Description	Current		Proposed 2003 ALP	
	Criteria	Existing	Phase I	Ultimate
**T/W Width	35'	30'	35'	35'
**T/W Safety Area Width	79'	**79'	79'	79'

* Recommended Length to Serve 100% of the General Aviation Fleet for Small Airplanes.
** T/W Safety Area grading steeper than design standards.
*** Current use exceeds 500 operations of B-II activity

[ ] Ravalli County Airport does not currently meet design standards.

PROPOSED AIRPORT IMPROVEMENTS

The need for the proposed improvements of Ravalli County Airport is based on the facility deficiencies, as outlined in the 2000 Ravalli County Airport Master Plan Update and the 2003 Airport Layout Plan Narrative Report. Airport deficiencies are projected to become increasingly problematic due to the forecast growth in demand through the year 2020.

The Ravalli County Airport was home base for 88 aircraft in 2003 and 97 in 2006. The Airport was also the destination for 10,846 operations from itinerant aircraft in year 2003. This equates to 5,423 visitations, as an operation is either a takeoff or a landing. The local aircraft owners and pilots have attended numerous public meetings at which time their suggestions for airport improvements have been made.

The airport serves primarily for business, governmental, and personal use. Ravalli County is in the heart of the Bitterroot National Forest, and is therefore heavily used for forest management purposes as well as for recreational users of the forest area. During forest fire season, the airport is the vital link in fire control. Nineteen (19) different helicopters flew on various missions from the airport along with many fixed-wing aircraft

during the fire season of 2003. A temporary air traffic control tower was provided and all non-essential flying was stopped during the worst of the fire season.

Law enforcement agencies and emergency life support flights also use the airport, mostly during the heavy tourist seasons. The various forest product industries are users of the airport.

The Rocky Mountain Laboratories has also been known to have charter flights to and from the airport. They, along with other bio-medical businesses in the area are the largest employers in the county. Most of their air travel however, is through the air carrier airport at Missoula, and that is expected to continue.

The use of this airport currently exceeds 500 operations by ARC BII aircraft. The 500 operations is the critical design aircraft decision mark coupled with the need for future building placement and additional apron space are a part of the reasons for the recommended improvements.

FAA can participate in eligible improvements with match from the local airport (current participation rate is 95% federal / 5% local – participation rates vary depending on the authorizing legislation). Half of the local share can be granted from the State Division of Aeronautics. The remaining amount or 2 ½% can be borrowed from the State or can be paid through "force account" items such as using the County-owned gravel on the airport.

CURRENT AIRPORT CONDITION AND IMPROVEMENT JUSTIFICATION

The Airport Layout Plan indicates the placement of the new runway and taxiway systems. These changes will allow the airport to expand the hangar and aircraft parking areas in a manner that will result in a more efficient use of the property. Presently, the areas available for future hangar development are limited and would not allow for the forecasted growth on the airport.

ALTERNATIVES

The current Ravalli County Airport Layout does not meet the FAA Design Standards, as demonstrated in Tables 1-1 and 1-2. Once the new runway and taxiway system are in place, the Ravalli Country Airport will comply with the recommended federal standards and will be a safer public utility for both the flying public and persons on the ground. Four separate alternatives are evaluated as part of this Environmental Assessment to include:

Alternative 1 – No Action;
Alternative 2 – Widen Existing Runway;
Alternative 3 – Relocate Runway 240 feet East;
Alternative 4 – Relocate Runway 400 feet East.

Alternative 1. No Action

This alternative explored the possibility of keeping the runway at its present 4,200-foot length and at the existing location. However, at its present configuration, the airport will not safely accommodate the current aviation needs. The Airport does not meet the FAA Design Standards previously discussed and with the FAA Design Non-Standard conditions, Alternative 1 would result in congestion within the confines of the buildings and hangars, thus leading to a potential for accidents of taxiing aircraft with other aircraft or with vehicles. The No Action alternative would not provide for the needed apron and hangar space to meet future projected demand. The current runway alignment has residential development located just south of the runway – this No Action alternative keeps the runway activity in close proximity to the noise sensitive development as opposed to other alternatives discussed below. Thus the noise caused by over-flight of aircraft over the neighborhood south of the airport would increase more than with other alternatives.

This option would not allow for additional land to be purchased to protect the airport and protect the adjacent neighborhoods from the airport. The poor pavement condition, as explained in Appendix II "AIRPORT PLANS" section, would require the airport to continually be involved in a major maintenance program.

By not providing an airport that meets the recommended standards that the current use justifies, it is possible that the State Division of Aeronautics and the Federal Aviation Administration could withdraw their financial support, thus leaving the task of airport development and financing up to the local sponsor, Ravalli County.

Alternative 1 does not meet the Purpose and Need.

Alternative 2. Move Existing Runway 80' East

The second alternative considered the elements necessary to meet the runway/taxiway separation requirements of 240 feet. This alternative includes moving the existing runway easterly resulting in a shift of the runway centerline 80 feet to the east. The relocation of the runway 40 feet further east than required by the FAA Design Standards is necessary to remove existing buildings from the FAR Part 77 Transitional Surface. These buildings would be obstructions as defined by Part 77 if the runway was placed at 240 feet. As the required runway width is 75 feet, this alternative would require the construction of a new runway both over and adjacent to the existing runway. The development would also require a new runway lighting system and the relocation of the PAPIs. This alternative could save land development costs but would result in the closure of the airport or have increased construction costs by requiring the Contractor to work extended (potentially 24-hour) shifts for three to six months. The closure of the airport during construction would result in economic loss to the Hamilton area, especially the airport tenants. It should be noted that Alternative 2 would still require land acquisition to the East.

The cost of this option is nearly the same as that of building a new runway further to the east, with increased construction costs offsetting the savings in land acquisition. However, this cost comparison does not include the economic loss to the users and tenants of the airport resulting from the temporary airport closure. This option would not provide for the needed hangar and apron expansion possibilities as the construction of any new hangars east of the existing buildings would penetrate the transitional surface as outlined in FAR Part 77. As noted on the schematic labeled "Option 2," the aircraft tie down apron cannot be expanded east of its current location due to the required Taxiway Object Free Area (OFA). Therefore, the option cannot allow for additional hangar development or apron development on the east side of the parallel taxiway. It also forces a loss of developable space on the northwesterly portion of the airport. The available space on the existing airport can be used for either hangars or ramp but not both. This option would not improve the altitude of the aircraft flying over the neighborhood south of the airport. This alternative limits the development opportunities of the airport and in doing so, provides a greater potential for safety concerns resulting from inadequate space for development causing congestion within the airport.

This alternative would cause the airport to be closed for a longer period of time in the future to accommodate a runway extension to the ultimate length. Following this option would eliminate the possibility of obtaining an ultimate runway length of 5,200 feet without closing the airport for several months during construction because of the elevation difference of terrain to the North and the significant construction effort and period to correct the difference.

Alternative 2 is not recommended because it does not meet the Purpose and Need.

(Option 2 Exhibit)

Alternative 3. Relocate Runway 240 Feet East

Alternative 3 includes constructing a new runway 240 feet east of the present runway, shifting the Runway 34 threshold 600 feet to the north, relocating the PAPIs, and installing new runway lighting. This alternative also converts the present runway to a parallel taxiway once the new runway alignment is available for use.

By moving the runway 240 feet east, the building restriction line also moves further east, which in turn, removes the existing structures and power poles from the Part 77 Transitional Surfaces. It does not, however, provide the setback distance required for new hangar construction west of the existing runway and east of the existing parallel taxiway or for the development of future aprons or apron expansion. Hangar construction in this area would penetrate the transitional surface as shown on the attached sketch. Alternative 3 could allow for the airport to remain open during runway construction with certain operational limitations on the ground. This alternative would also provide the space required for a 1,000-foot runway extension to the north, but does not provide for the apron expansion required for the additional aircraft tie-downs.

By developing a new runway 240 feet east of the existing runway instead of the 400 feet shown on the approved ALP, the airport would lose the 130-foot-wide potential tie-down apron for the entire front line length of the apron, or 227,800 square feet (5.23 acres). The potential hangar area would be reduced by 262,500 square feet (6.02 acres). This additional space could lease for $0.07/square foot annually (current lease rate), equating to a potential loss of $34,321 of ~~potential~~ future revenue per year to the airport.

This alternative would require acquisition of 186 acres of land and reduces the required land acquisition shown on the ALP by 160-foot by 9,000-foot, or 33 acres. The reduction in the required land acquisition is estimated to cost $12,000 per acre or $396,000.

Alternative 3 will meet the minimum criteria in terms of airport design for the present time. However, it does not provide for future hangar and apron development because of the distance from the runway to the building area.

Alternative 3 is not recommended because it does not meet all of the required Purpose and Need.

(Option 3 Exhibit)

Alternative 4. Relocate Runway 400 Feet East

This alternative, depicted on the current ALP would convert the present runway into the parallel taxiway and construct a new 75-foot wide runway 400 feet east and parallel to the existing runway including the shifting of the Runway 34 threshold 600 feet to the north. The project would also include relocating the PAPIs, and installing new runway lighting. An additional area for new apron and new hangar construction that would not penetrate the transition surface would be available. This option allows for an ultimate 5,200-foot runway length. Another positive impact from this option allows for the runway to start some 600' further to the north and away from Tammany Lane. The threshold movement will increase the altitude of aircraft on approach from the south over the neighborhood to the south. A major portion of the length of the existing runway could be used for the new parallel taxiway. This option allows for a runway protection zone to be unobstructed with an ultimate 5,200' runway length and a 75' width.

Based on the information in Appendix I: "Forecast of Aviation Activity," the layout for new hangars and ramp will be sized to meet the predicted growth. Any reduction in the overall development within the terminal area will not meet the Purpose and Need. This option, therefore, provides an additional 6.02 acres for new hangar construction and 5.23 acres for additional ramp development.

Alternative 4 requires the acquisition of 219 acres of land which is an increase of 33 acres over option 3. The 33 acre additional land acquisition is estimated at $12,000 per acre for a cost of $396,000, of which 2 ½% ($9,900.00) would be the local share. The remaining 97.5% can be funded by FAA and Montana Department of Aeronautics grants. The revenue generated from hangar space leases in this area would pay the one time local share in less than one year. The area required for additional hangar and apron space is shown on the following sketch and ALP.

The placement of the new runway 400' east and conversion of the existing runway into the parallel taxiway will provide a safer environment for the type of aircraft now using the airport. This alternative, as well as Alternative #3, will permit the airport to remain open during the runway construction period. The airport does not have, nor is it expected to have, a full-time air traffic control tower. The movements of the aircraft on the runway and taxiway systems are the responsibility of each pilot to see and be seen. Keeping the construction activity separate from active use area of the airport is an important safety issue at a busy non-towered general aviation airport.

Alternative 4 meets all of the requirements outlined in the Purpose and Need.

(Option 4 Exhibit)

PROPOSED DEVELOPMENT SCHEDULE

In order to construct the runway as recommended, 400-feet east of the present runway, an additional 219 acres of land must be purchased by the airport. The airport layout plan Exhibit "A," "Airport Property Map," identifies the lands needed as parcels 10 and 12. Parcel 12 is presently owned by Daly Ditches and is approximately 2 acres in size. Parcel 10 includes ten twenty-plus acre parcels totaling 217 acres and is needed for the physical improvements. The development of the Noise Contour Map in 2004 may necessitate acquisition of additional land east of Parcel 10 for land use protection of the preferred Alternative.

With the movement of the new runway away from its present location, it will be necessary to provide a new taxiway system to connect with both the new and existing areas where aircraft must taxi. A proper and adequate taxiway system is vital to the safe and efficient operation of any airport, and is particularly important for the safe operation of an uncontrolled airport.

There will be repairs required to the existing taxiway system until such time that the new design has been constructed. Segments of the existing taxiway will be required for the preferred alternative; therefore, the repair of the needed sections of the taxiway system has been included in the development plans for the preferred alternative.

The type of aircraft presently using the airport and considerations disregarding construction costs justify the extension of the runway to 5,200 feet during Phase I. Numerous smaller GA aircraft, which account for the majority of the operations would benefit from a 5,200-foot runway. Many summer days of 90°F or better are experienced at Hamilton. Couple hot temperatures with the airport elevation of 3,644 feet and the density altitude impact is felt on nearly every aircraft. Small aircraft used by the flight schools at the airport are especially impacted with their touch and go procedures. The 5,200-foot runway length is recommended to serve 100% of the small general aviation aircraft using the airport. This plan therefore considers the feasibility of attaining the 5,200-foot runway between years 2006-2010.

The recommended projects per year are as indicated below. Costs are determined using actual unit prices bid for comparable projects in 2006 without adjustments for inflation. A column assuming inflation at 5% per year is also included to demonstrate the effect of time delays on construction costs. Unless noted otherwise, proposed projects listed below are eligible for FAA funding at the time this Environmental Assessment was prepared.

TABLE 1-3

	2006 Cost	Cost Inflated 5% / Year
Phase I Development (2007)		
Year 2007		
Land Acquisition (Parcels 10 and 12) 219 Acres	$3,316,685	$3,316,685
Land Acquisition (identified by noise contours) 100 Acres	$1,514,463	$1,514,463
Build New Taxilanes on South End and Repair Parallel Taxiway	$ 532,741	$ 532,741
TOTAL FOR YEAR 2007	$5,363,889	$5,363,889
Years 2008-2011		
Construct Relocated Runway 16-34 (4,200' x 75')	$2,894,062	$3,517,750
Construct Taxiway Ladders "A1" and "A4"	$ 214,160	$ 260,313
New Runway Lighting	$ 188,404	$ 229,006
Relocate PAPI	$ 16,000	$ 19,448
North Apron Reconstruction	$1,805,895	$1,990,999
Taxiway "B" Reconstruction – North	$ 237,313	$ 261,638
Parallel Taxiway "A" Lighting Improvements	$ 115,763	$ 134,010
Animal Control Perimeter Fence, 19,500 L.F.	$ 454,368	$ 525,988
Taxiway "B" Reconstruction – South	$ 625,118	$ 759,835
Interior and South Apron Reconstruction	$1,290,752	$1,647,363
TOTAL PHASE I DEVELOPMENT	$13,607,249	$14,874,396
Phase II Development (2011 – 2016)		
Years 2011-2016		
Runway 16-34 Extension (5,200' x 75') and Safety Area Grading	$ 347,288	$ 465,398
Parallel Taxiway Extension and Ladder "A"	$ 752,456	$1,058,780
Overlay Parallel Taxiway "A"	$ 371,598	$ 522,874
Construct Ladders "A2" and "A3"	$ 219,949	$ 309,489
Construct Taxiways "A3," Section 1 of "D," Misc Taxiway	$ 453,789	$ 638,526
Access Road Improvements	$ 52,093	$ 176,405
Misc. Taxilane Construction	$ 347,288	$1,176,036
Crack Seal All Pavements	$ 17,364	$ 58,802
Fog Seal All Pavement Except Aprons	$ 23,153	$ 78,402
TOTAL PHASE II DEVELOPMENT	$2,584,978	$4,484,712

Phase III Development (2016 – 2021)

Years 2016-2021		
Taxilane Construction	$ 694,575	$2,469,675
Crack Seal All Pavements	$ 69,458	$ 272,282
Overlay Runway 16-34 – Grooved	$ 173,644	$ 680,704
Overlay Aprons	$ 382,016	$1,572,427
TOTAL PHASE III DEVELOPMENT	$1,319,693	$4,995,088
TOTAL PROJECT COST 2006-2021	**$17,511,920.00**	**$24,354,196.00**

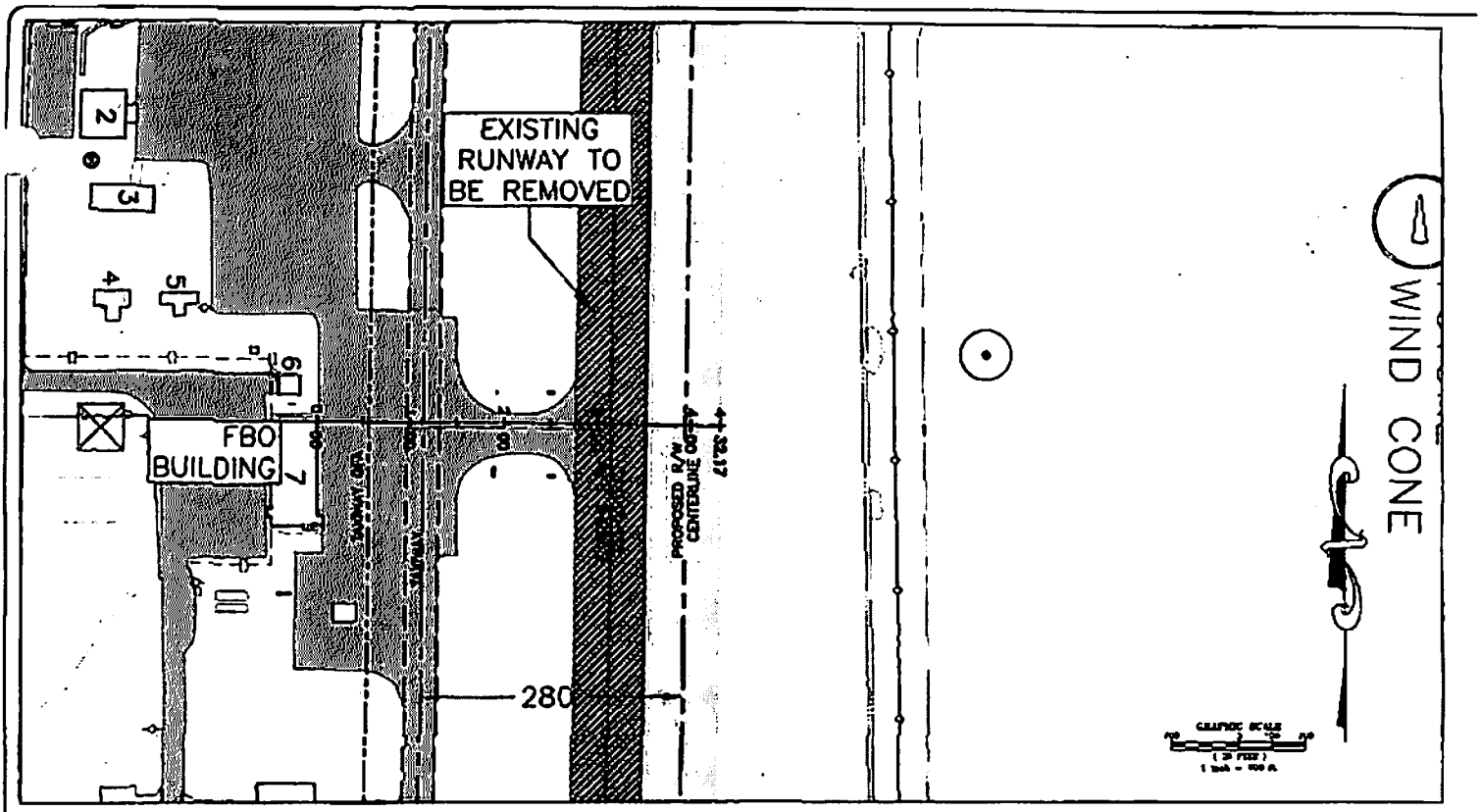
The Preferred Alternative includes the following improvements and advantages:

- Constructs a new runway (75-foot by 4,200-foot) 400 feet east and parallel with existing runway.
- Converts existing runway to parallel taxiway.
- Provides additional 6.0 acres of additional hangar space on west side, outside of Part 77 transitional surface.
- Provides for an ultimate runway length of 5,200 feet.
- Relocates new runway threshold 600 feet north of existing runway threshold.
- Provides unobstructed Runway Protection Zone (RPZ) for ultimate runway length of 5,200 feet.
- Provides 5.2 acres of additional ramp and tie-down space.
- Improves safety by increased separation between runway and parallel taxiway.

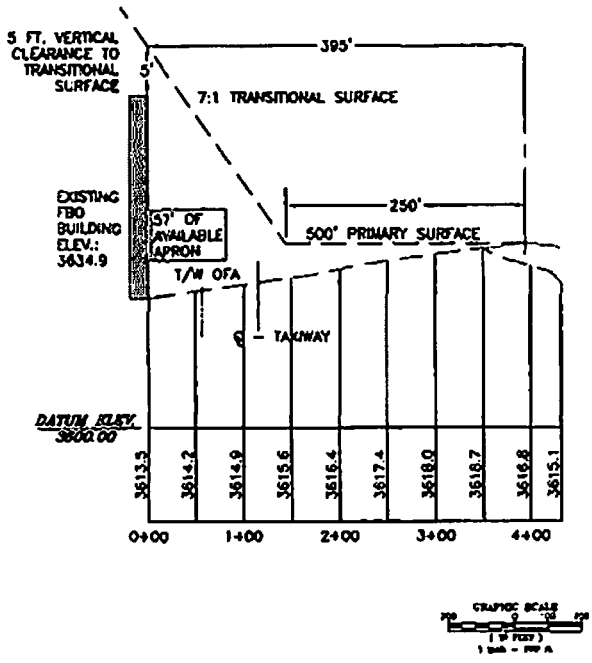
The Preferred Alternative is depicted in the Airport Layout Plan.

H:\0877\EA\History_Inventory.doc

(ALP Sketch)

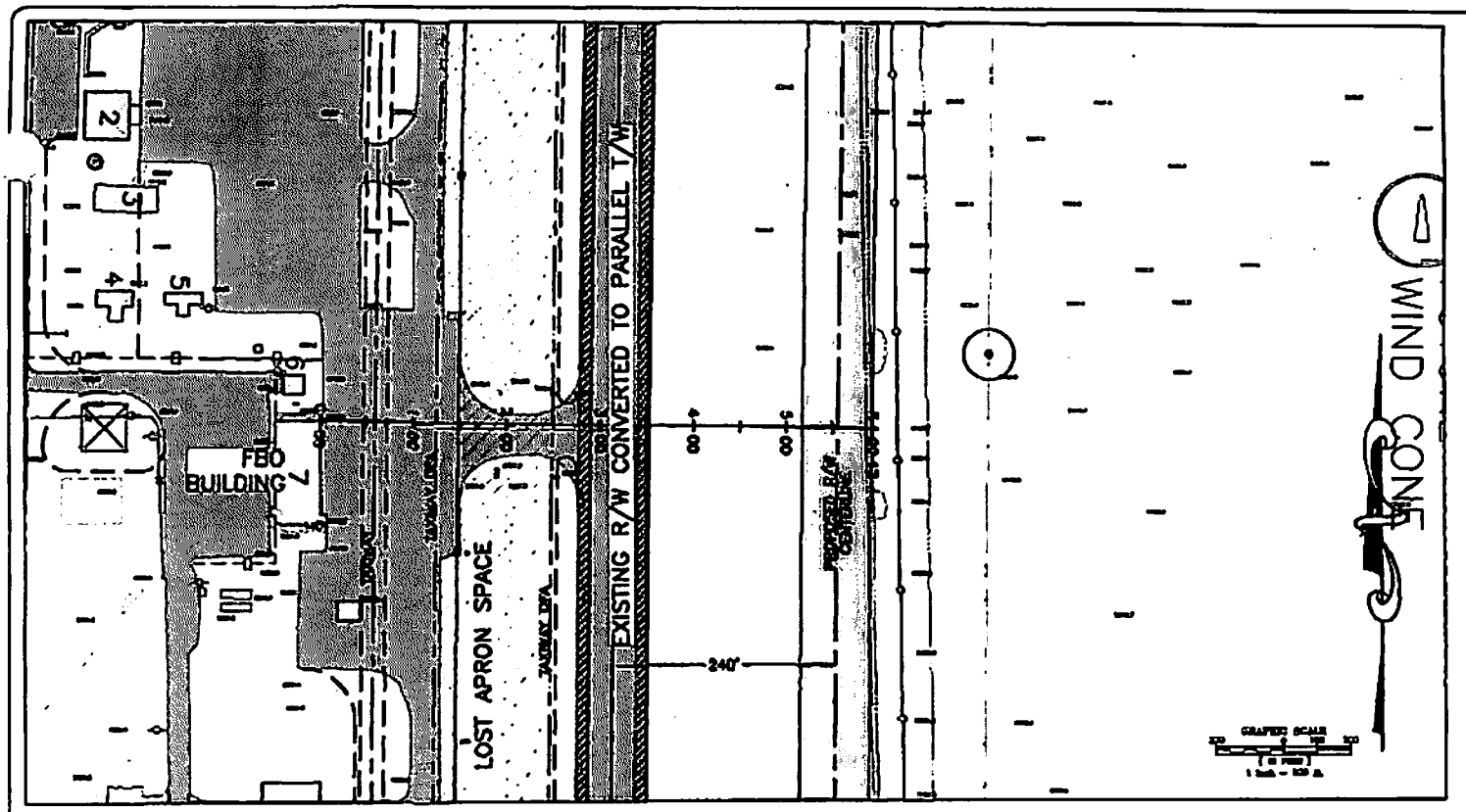


OPTION 2
RELOCATE RUNWAY
CENTERLINE 80 FEET EAST

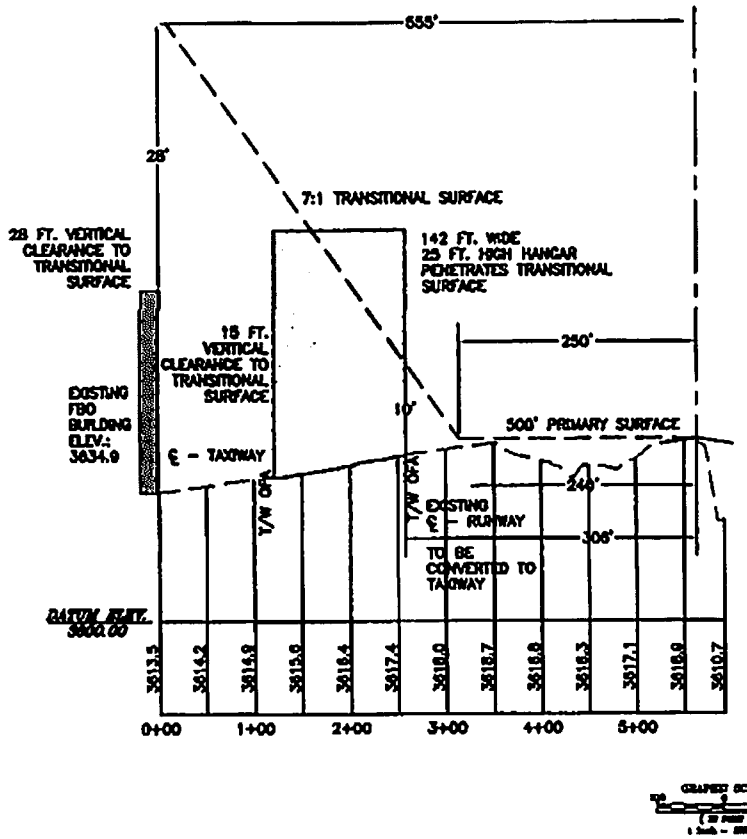


MORRISON MAIERLE, INC.

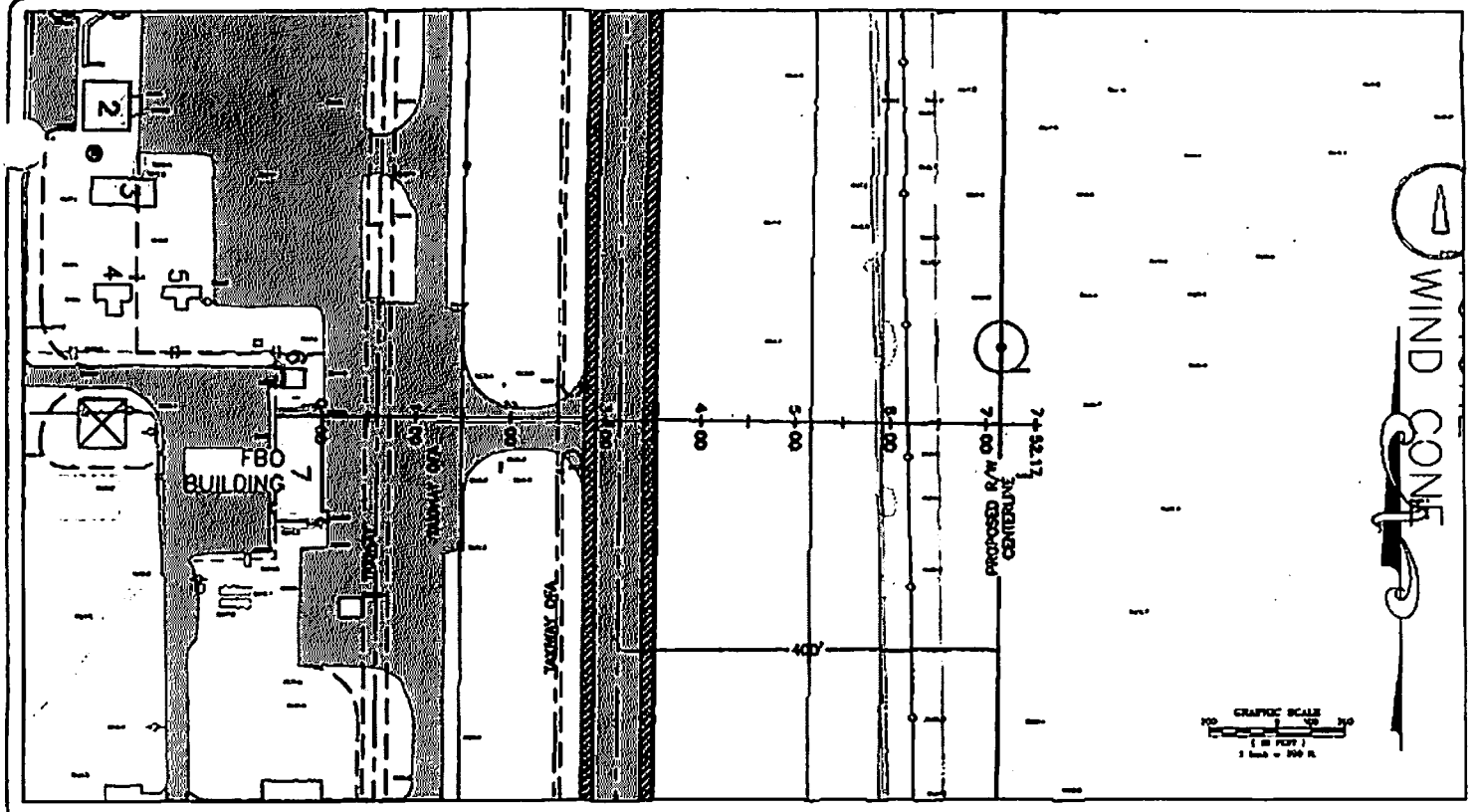
RAVALLI CO. AIRPORT EA
WIDEN EXISTING RUNWA
OPTION 2



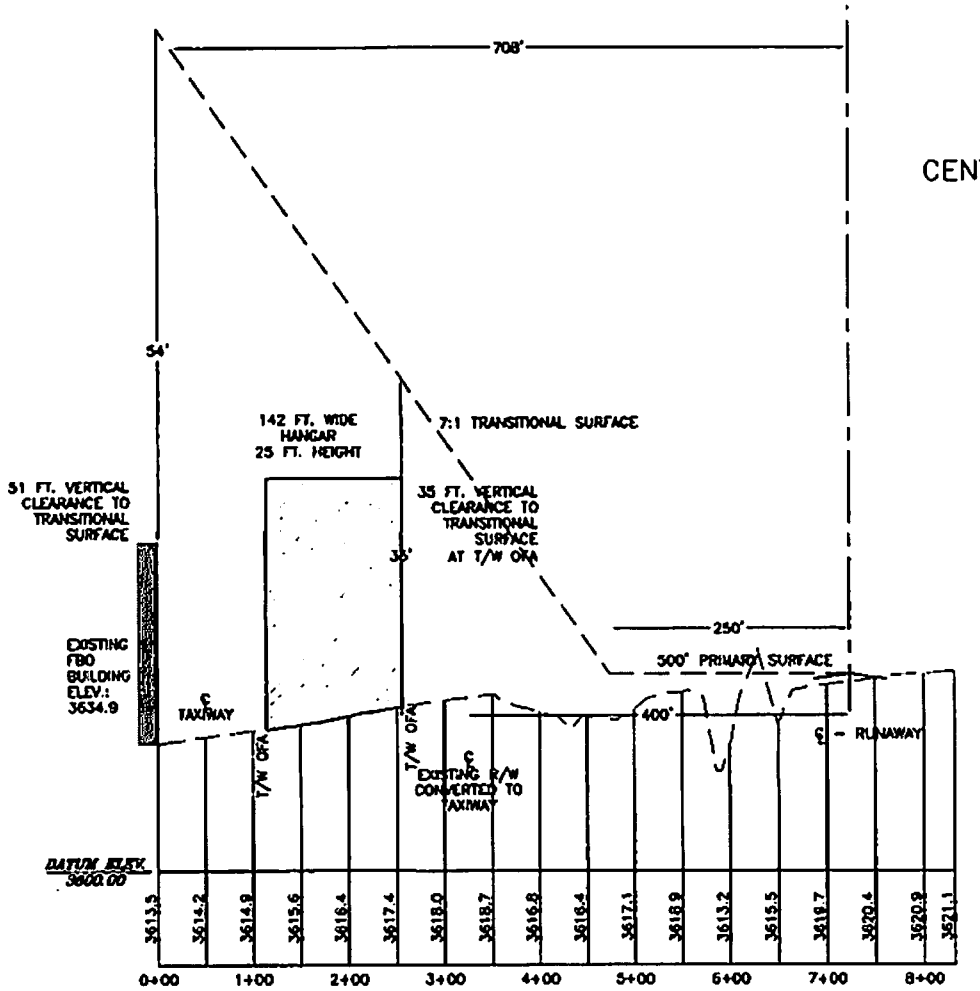
OPTION 3
RELOCATE RUNWAY CENTERLINE 240 FEET EAST



MORRISON MAIERLE, INC.	RAVALLI CO. AIRPORT EA RELOCATE R/W 240' EAST OPTION 3
CLIENT: RAVALLI CO.	
FIELD WORK:	DATE: 08/13/04
DRAWN BY:	SCALE: 1" = 200'
CHECKED BY:	PROJ. #0807
	PLOTTED DATE: Nov/04/2004 - 02:01:39 pm
	DRAWING NAME:
	SHEET 3 OF 3

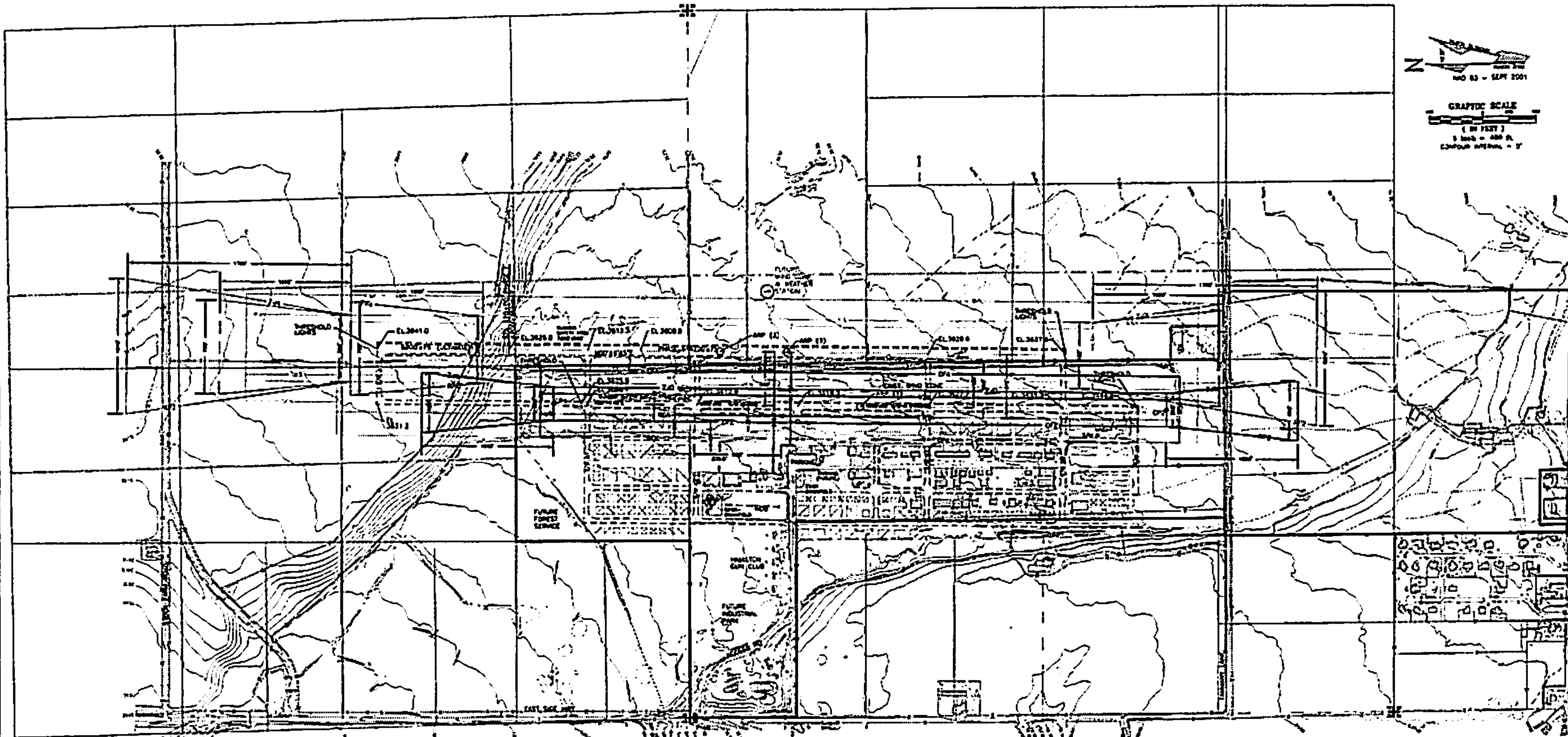


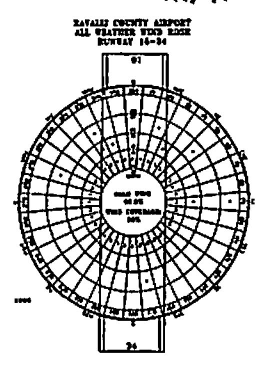
OPTION 4
RELOCATE RUNWAY CENTERLINE 400 FEET EAST



MORRISON MAIERLE, Inc.

RAVALLI CO. AIRPORT BA
RELOCATE R/W 400' EAST
OPTION 4





RUNWAY DATA

	RUNWAY 16/34 EXISTING	RUNWAY 16/34 PHASE I	RUNWAY 16/34 ULTIMATE
AFFECTIVE / PRECENT GRADIENT IN %	0.91	0.70/1.30	0.63/1.30
RUNWAY (LENGTH / WIDTH)	4200' X 75'	4200' X 75'	5200' X 100'
USABLE RUNWAY LENGTH	4200'	4200'	5200'
APPROACH SURFACE (SLOPE)	20:1 / 20:1	34:1 / 34:1	34:1 / 34:1
INSTRUMENT RUNWAY / CATEGORY	VISUAL	NPI	NPI
MAXIMUM ELEVATION ABOVE MSL	3644.1	3638.0	3641.0
PAVEMENT DESIGN STRENGTH (ASPHALT)	17,000# SWL	17,000# SWL	17,000# SWL
RUNWAY LIGHTING	MIRL	MIRL	MIRL
RUNWAY MARKING	BASIC	NPI	NPI
VISUAL AIDS	VASI	PAPI-4/R 16 & 34	PAPI-4/R 16 & 34
RUNWAY SAFETY AREA (RSA) (L/W)	4800' X 150'	4800' X 150'	7200' X 500'
OBJECT FREE AREA (OFA) (L/W)	4800' X 500'	4800' X 500'	7200' X 800'
OBSTACLE FREE ZONE (OFZ) (L/W)	4600' X 250'	4600' X 400'	5600' X 400'
RUNWAY PROTECTION ZONE (RPZ) (L/W)	250'X450'X1000'	500'X700'X1000'	500'X1010'X1700'
APPROACH VISIBILITY MIN	VISUAL 3 MI.	NOT < 1 MI.	NOT < 1 MI.
AIRCRAFT SERVED AIRPORT REFERENCE CODE	SMALL AIRCRAFT B-II (SMALL ONLY)	A & B B-II	A, B, & C C-II

CONTROL POINTS

NAME	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP1	[illegible]	[illegible]	3643.7	REBAR w/ CAP 300' NORTH OF R/W 16
CP2	[illegible]	[illegible]	3641.5	REBAR w/ CAP 300' SOUTH OF R/W 34

RUNWAY END COORDINATES (NAD 83)

RUNWAY	EXISTING	PHASE I	ULTIMATE
16	LAT 46°15'28.1" LONG. 114°07'31.6"	LAT 46°15'31.5" LONG. 114°07'25.8"	LAT 46°15'41.4" LONG. 114°07'26.0"
34	LAT 46°14'46.7" LONG. 114°07'32.3"	LAT 46°14'50.1" LONG. 114°07'26.6"	LAT 46°14'30.1" LONG. 114°07'26.6"

AIRPORT DATA

	EXISTING	ULTIMATE
AIRPORT ELEVATION	3644.1 (NAVD 88)	3641.0 (NAVD 88)
ARP COORDINATES (NAD 83)	LAT 46°15'05.4" LONG. 114°07'32.0"	LAT 46°15'10.8" LONG. 114°07'26.2"
MEAN MAX TEMP	84° F	84° F
NPIAS ROLE	GENERAL AVIATION	GENERAL AVIATION
AIRPORT REFERENCE CODE (ARC)	B-II	C-II
WIND COVERAGE 12 MPH	98%	98%
DESIGN AIRCRAFT / AIRPORT REFERENCE CODE	CATEGORY B GROUP II	CATEGORY C GROUP II

ARP COORDINATES

ARP #	COORDINATES	TYPE
1	LAT 46°15'05.4" LONG. 114°07'32.0"	EXISTING RUNWAY
2	LAT 46°15'10.8" LONG. 114°07'26.2"	PHASE I RUNWAY
3	LAT 46°15'15.7" LONG. 114°07'26.1"	ULTIMATE RUNWAY

TAXIWAY DATA

	T/W A EXISTING	T/W A ULTIMATE	T/W B EXISTING	T/W B ULTIMATE	T/W A1 ULTIMATE	T/W A2 ULTIMATE	T/W A3 ULTIMATE	T/W A4 ULTIMATE	T/W A5 ULTIMATE
WIDTH	R/W 16-34	50'	30'	50'	50'	50'	50'	50'	50'
T/W DESIGN GROUP	R/W 16-34	CII	BII SMALL	CII	CII	CII	CII	CII	CII
PAVEMENT STRENGTH	R/W 16-34	17K SWL	17K SWL	17K SWL	17K SWL	17K SWL	17K SWL	17K SWL	17K SWL

NOTE:
PARALLEL TAXIWAY SYSTEM TAXIWAYS ARE LIGHTED WITH MEDIUM INTENSITY LIGHTS.

LEGEND

	EXISTING	FUTURE
RUNWAY		
BUILDING		
FENCE		
ASPHALT		
GRAVEL		
AIRPORT BOUNDARY		
ADJACENT PROPERTY		
CONTROL POINT		
AIRPORT REFERENCE POINT (ARP)		

MODIFICATIONS TO FAA STANDARDS

DESCRIPTION	DATE	BY
NONE		

SPONSOR APPROVAL
RAVALLI COUNTY AIRPORT

COUNTY COMMISSION ____ DATE ____

FAA ____ DATE ____

MDT AERONAUTICS ____ DATE ____

RAVALLI COUNTY AIRPORT
AIRPORT LAYOUT PLAN

HAMILTON MONTANA

AIRPORT LAYOUT PLAN

MORRISON MAIERLE, INC.

PROJECT NO. 6477.017
SHEET NUMBER 2 OF 8
DRAWING NUMBER 2